

**UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE  
DEPARTMENT OF COMPUTER SCIENCE AND ELECTRONICS  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
UNIVERSITAS GADJAH MADA**

Module name	Programming II	
Module level	Undergraduate	
Code	MII-1211	
Courses(if applicable)	Programming II	
Semester	Fall (Odd)	
Contact person	Drs. Janoe Hendarto, M.I.Kom Faizah S.Kom. M.Kom. I Gede Mujiatna S.Kom. M.Kom.	
Lecturer	Drs. Janoe Hendarto, M.I.Kom Faizah S.Kom. M.Kom. I Gede Mujiatna S.Kom. M.Kom.	
Language	English	
Relation to curriculum	1. Undergraduate degree program; mandatory; 3 <sup>rd</sup> , 5 <sup>th</sup> , or 7 <sup>th</sup> semester. 2. International undergraduate program; mandatory; 3 <sup>rd</sup> , 5 <sup>th</sup> , or 7 <sup>th</sup> semester.	
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students 2. International undergraduate program: lectures, < 30 students	
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week.	
Credit points	3 credit points (cr).	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Recommended prerequisites	Programming I	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	LO1 Have knowledge of the theory and basic knowledge of algorithms and data structures.	PLO3
	LO2 Be able to analyze, design, and implement linear data structures such as linked lists, and queues.	PLO4

	LO3 Be able to analyze, design, and implement non-linear data structures such as matrices, multiple linked lists, trees, and graphs.	PLO4
	LO4 Have knowledge about searching and sorting algorithms and be able to implement them in a computer program.	PLO3
	LO5 Have knowledge of the theory and basic concepts of Object Oriented Programming.	PLO3
	LO6 Be able to create a computer programming based on OOP.	PLO5
Content	This course is a core compulsory subject and is a continuation of Programming I. This course provides the knowledge and skills that allow students to be able to analyze problems, design algorithms, and use the appropriate data structure such that the resulting computer program is structured and efficient. Programming II focuses on data structures and discusses both linear and non-linear data structures, as well as the pros and cons of both. It also discusses the objected-oriented programming paradigm.	
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.	
Media employed	LCD, whiteboard, websites, handouts	
Assessments and Evaluation	LO1: problem 1 in mid-term (5%), homework 1 (5%) LO2: problem 2 in mid-term (5%), homework 2 (5%) LO3: problem 3 in mid-term (5%), problem 2 in final (5%), homework 3 (5%), assignment 1: create a non-linear data structure and its corresponding algorithm and computer program (10%) LO4: problem 4 in mid-term (5%), homework 4 (5%) LO5: problem 1 in final (5%), homework 5 (5%), assignment 2: create an OOP program and a hashing program (5%) LO6: problem 3 in final (5%), problem 4 in final (5%), homework 6 (5%), homework 7 (5%), assignment 3: create an OOP program based on a graphing problem (10%)	

Reading List	WA : Data Structures and Algorithms, Alfred V. Aho, dkk. 1998 WB : Data Structures and Algorithms in Java, Adam Drozdek, 2005 AA : Data Structures using C, Tanenbaum, A., Y. Langsam, and M. Augenstein, 1990, Prentice-Hall. AB : Data Structures and Algorithms in Java 2nd Edition, Robert Lafore, 2002
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